

## **A Case-Control Study of *Salmonella* Infection in Infants, FoodNet, 2002-2004 (Updated August 24, 2005)**

L. Amanda Ingram, MPH<sup>1</sup>, Kathleen E. Fullerton, MPH<sup>2,3</sup>, Ruthanne Marcus, MPH<sup>4</sup>, Bridget J. Anderson, PhD<sup>5</sup>, Beletshachew Shiferaw, MD<sup>6</sup>, Nicole Haubert, BS<sup>7</sup>, Duc Vugia, MD<sup>8</sup>, Stephanie Wedel, MPH<sup>9</sup>, Patrick V. McCarthy, PhD, MPH<sup>10</sup>, Frederick J. Angulo, DVM, PhD<sup>2</sup>, Timothy F. Jones, MD<sup>1</sup>, and the EIP FoodNet Working Group.

<sup>1</sup>TN Dept of Health, Nashville, TN, <sup>2</sup>CDC, Atlanta, GA, <sup>3</sup>Atlanta Research and Education Foundation, Atlanta, GA, <sup>4</sup>CT EIP, New Haven, CT, <sup>5</sup>NYS Dept of Health, Albany, NY, <sup>6</sup>OR Dept of Human Services, Portland, OR, <sup>7</sup>CO Dept of Public Health and Envr, Denver, CO, <sup>8</sup>CA Dept of Health Services, Berkeley, CA, <sup>9</sup>MN Dept of Health, Minneapolis, MN, <sup>10</sup>FDA, College Park, MD.

**Background:** Rates of salmonellosis are highest in infants. However, little is known about risk factors for disease in this high-risk group.

**Methods:** In 2002-2004, the Foodborne Diseases Active Surveillance Network (FoodNet) conducted a population-based case-control study of sporadic salmonellosis among infants <1 year of age in 8 states. Cases were identified via active laboratory-based surveillance. Well controls were frequency-matched by age and identified through birth registries or published birth announcements. We assessed diet and environmental exposures in the 5 days before illness onset or interview. Data were analyzed using logistic regression, adjusting for education and age, which was categorized as <3 months, 3-6 months and 6-11 months old.

**Results:** There were 442 cases and 928 controls enrolled in the study. Cases were significantly more likely to report exposure to reptiles (OR=5.2, 95% CI=3.4-7.9), riding in a shopping cart next to raw meat or poultry (OR=3.2, 95% CI=2.1-5.1) and consumption of reconstituted concentrated infant formula (OR=2.0, 95% CI=1.4-2.8). Travel outside the U.S. was a risk factor for those 3-6 months and 6-11 months of age (OR=11.4, 95% CI=1.2-109.7, and OR=22.9, 95% CI=2.4-217.8, respectively). Attending daycare with a child with diarrhea (OR=5.3, 95% CI=1.8-15.7) and consumption of meat (OR=1.7, 95% CI=1.1-2.7) were risk factors in those 6-11 months of age. Breastfeeding was protective in all age categories (overall OR=0.5, 95% CI=0.3-0.6), most strongly in those <3 months of age (OR=0.2, 95% CI=0.1-0.5).

**Conclusions:** We identified a number of modifiable risk factors for salmonellosis in infants, which can help focus education and preventive interventions in this high-risk group. Breastfeeding should be further encouraged for infants.